What Is Claimed Is:

1   1.   An oven conveyor alignment system adapted for use in an

2   oven having an elongated axis, the system comprising:

3   a terminal roller having two ends positioned transaxially with

4   respect to the oven elongated axis;

5   a conveyor belt having an elongated axis, the conveyor belt rotating

6   around the terminal roller;

7   means for aligning the conveyor belt elongated axis with the oven

8   elongated axis by adjusting the position of the conveyor belt with respect

9   to the two ends of the terminal roller;

10   a camera positioned toward one of the ends of the terminal roller

11   for generating a digital image signal corresponding to the conveyor belt's

12   position; and

13   means for controlling the means for aligning in response to the

14   digital image signal.

1   2   The oven conveyor alignment system of Claim 1 further

2   comprising:

3   a digital medium for storing the digital image signal as a pixel

4   representation of the conveyor belt position.

1   3.   The oven conveyor alignment system of Claim 2 wherein the

2   camera has a scan interval whereby the camera generates a new pixel

3   representation according to the scan interval.

1   4.   The oven conveyor alignment system of Claim 3 wherein the

2   means for aligning comprises a tensioning assembly connected to a roller

3   shaft located at one of the ends of the terminal roller.

1   5.   The oven conveyor alignment system of Claim 4 wherein the

2   means for controlling comprises a control computer that recognizes an

3   offset in the pixel representation of the conveyor belt position and sends a

4   signal to the tensioning assembly in order to vary the tension on the

5   conveyor belt at the one end of the terminal roller in order to vary the

6   conveyor belt position and correctly align the conveyor belt elongated axis

7   with the oven elongated axis.

1   6.   The oven conveyor alignment system of Claim 4 wherein the

2   tensioning assembly comprises:

3   a sprocket wheel;

4   a motor mechanically connected to the sprocket wheel; and

5   an adjustment nut mechanically connected to the sprocket wheel

6   by a drive chain, wherein movement of the adjustment nut controls

7   transaxial movement of the terminal roller, and wherein transaxial

8   movement of the terminal roller controls the alignment of the conveyor.

1   7.   The oven conveyor alignment system of Claim1 wherein the

2   camera is protected by an external housing.

1   8.   The oven conveyor alignment system of Claim 5 wherein the

2   control computer operates in accordance with instructions, the instructions

3   comprising:

4   an alarm trip point corresponding to an alarm magnitude of pixel

5   misalignment; and

6   a shut down trip point corresponding to a shut down magnitude of

7   pixel misalignment.

1   9.   The oven conveyor alignment system of Claim 1 wherein the

2   means for aligning can alternatively be controlled either manually or

3   automatically.

1   10.   The oven conveyor alignment system of Claim 1 wherein the

2   camera is alternatively focused automatically or manually.

1   11.   A method of maintaining oven conveyor alignment with

2   respect to a terminal roller having two ends, wherein an oven conveyor

3   belt has an elongated axis and the conveyor belt is rotating around the

4   terminal roller, the method comprising:

5   positioning and focusing a camera to view the oven conveyor belt

6   alignment with respect to one of the ends of the terminal roller;

7   generating a digital image signal of the oven conveyor belt with

8   respect to the end of the terminal roller; and

9   using the digital image signal to make necessary

10   adjustments to the oven conveyor alignment.

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2   12.   The method of Claim 11, further comprising storing the

3   digital image signal as a pixel representation of oven conveyor alignment

4   with respect to the end of the terminal roller.

1   13.   The method of Claim 11, further comprising repeatedly the

2   generating a digital image signal of the oven conveyor according to a

3   selected scan interval.

1   14.   The method of Claim 12, wherein using the digital image

2   signal to make necessary adjustments on the conveyor alignment

3   comprises:

4   comparing the stored pixel representation of conveyor alignment to

5   a coordinate system representing zero error in conveyor alignment to

6   generate an electrical signal based on misalignment;

7   sending the electrical signal to a motor able to adjust tension on

8   one of the ends of the terminal roller; and

9   adjusting the tension on one of the ends of the terminal roller to

10   correct the misalignment.

1   15.   The method of Claim 11, further comprising projecting the

2   digital image signal on a video monitor for use by an operator.

1   16.   The method of Claim 11, further comprising protecting the

2   camera from physical damage using an external camera housing.